THE METAPHYSICS OF Sir *Iſaac Newton*: OR, A COMPARISON Between the OPINIONS of Sir *ISAAC NEWTON* AND Mr. *LEIBNITZ*.

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Tranſlated from the *FRENCH*.

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had no full Brothers nor Sisters his Father
an extravagant weak Man had an Estate of
about 50 pr Annum but married an
Ayscough whose Father lived also at
Woolsthorpe & was Lord of ye Manor
She afterward married Mr Smith Rector
of N. Witham. Sr Isaac when a boy
used to open gates for the Servant to carry
Corn to Grantham Market, & to watch
Sheep, his Mother's Brother found him
in a Hay Loft at Grantham working
Mathematical Problems & insisted on
giving him a University Education,
He died a Bachelor immaculate aged 84.
Dinner was oft 3 hours ready before it was
brought to him, When rising he often
sat with one leg in his Breeches for hours
Woolsthorpe is about ½ mile W. of Colters
worth on the great N. Road
He died at Kensington. His Townhouse
was in St Martins Street, ye Corner of
Longs Court Leicester Fields, where still
stands a small Observatory built by
him on the Roof

THE METAPHYSICS OF Sir *ISAAC NEWTON.*

CHAP. I.

Of GOD.

SIR ISAAC NEWTON was firmly perſwaded of the Exiſtence of a GOD; by which he underſtood not only an infinite, omnipotent, eternal, and creating Being, but moreover a Maſter, who has made a Relation between himſelf and his Creatures; for

the Knowledge of a God without ſuch Relation is a meer barren Idea, which leaves human Nature deſtitute of Morality and Virtue.

Hence this great Philoſopher makes a very ſingular Remark at the End of his *Principia*, *viz.* that we do not ſay, *my Eternal*, *my Infinite*, becauſe thoſe Attributes have no Relation to human Nature, but that we do, and ought to ſay, *My* GOD; thereby implying, that we underſtand him to be the Maſter and Preſerver of our Lives, and the Object of our Thoughts. I remember that in many Converſations I had with Dr. CLARKE in the Year 1726, that great Man never mentioned the Name of God without a moſt remarkable Recollection and Reverence; and upon my obſerving to him the Impreſſion it made on me, he told me, that he had inſenſibly learned that Cuſtom, (which indeed every one ſhould practiſe) from Sir ISAAC NEWTON.

Sir ISAAC's Philoſophy neceſſarily leads to the Knowledge of a ſupreme Being, who has created and diſpoſed every thing freely. For if, according to Him, and indeed according to the Reaſon of Things, the World is finite; if there is a *Vacuum*, Matter

Matter does not then neceſſarily exiſt, and if ſo, it muſt receive its Exiſtence from a free Cauſe. If Matter gravitates, as it has been plainly demonſtrated that it does, it does not gravitate by its own Nature, and muſt therefore have received its Gravitation from God. If the Planets move in one Direction rather than in another in an unreſiſting Space; the Hand of their Creator has then order'd their Courſes in this Direction with an abſolute Freedom.

The pretended philoſophical Principles of DESCARTES are very far from thus conducting the Mind to the Knowledge of its Creator; yet God forbid, that I ſhould calumniate that great Man, and accuſe him of miſtaking the ſupreme Intelligence, to which he owed ſo much, and by which he had been raiſed above almoſt all the Men of his Time; I only ſay, that the Abuſe he ſometimes made of his Underſtanding, has now and then led his Diſciples into Precipices which he himſelf avoided. I ſay that the *Carteſian* Syſtem produced that of SPINOSA: I may further add, that I have myſelf known many Perſons, whom *Carteſianiſm* has induced to admit no other God but the Immenſity of Things; whereas, on

the contrary, I never met with any *Newtonian* who was not a Theiſt in the ſtricteſt Senſe.

If we are once perſuaded, with DESCARTES, that it is impoſſible the World ſhould be finite, and that Motion is always in the ſame Quantity: If we preſume to ſay with him, *Give me Motion and Matter, and I will produce a World*; it muſt be then confeſſed, that theſe falſe Ideas, by Conſequences juſtly deducible from them, exclude the Idea of one only infinite Being, the ſole Author of Motion, and of the Organization of Bodies.

Many will perhaps be ſurprized, that of all the Arguments for the Exiſtence of a God, that of final Cauſes was, in Sir ISAAC NEWTON's Opinion, the moſt convincing. The Deſign, or rather the infinitely various Deſigns, which ſhew themſelves throughout the vaſteſt, as well as the minuteſt Parts of the Univerſe, are ſtrong Demonſtrations, which from their very Clearneſs and Simplicity have therefore been deſpiſed by ſome Philoſophers. Sir ISAAC always thought that theſe infinite Relations, which he had a greater Inſight into than any other, prov'd the

the Workmanſhip of a perfectly ſkilful Artiſt.

Reaſons all People do not agree in.

He was far from being ſatisfied with the grand Proof drawn from the Succeſſion of Beings, wherein it is commonly ſaid, that if Men, Animals, Vegetables, and all that compoſes the World were eternal, we muſt be forced to admit a Series of Generations without a Cauſe: Theſe Beings, ſay they, could have no Original of their Exiſtence; they could not have it from without, becauſe they are ſuppoſed to aſcend from Generation to Generation without any Beginning: Nor could it be from within themſelves, becauſe none of them could be ſelf-exiſtent: Thus all would be Effect without any Cauſe.

Reaſons of the Materialiſts.

He thought that this Argument was founded on the equivocal Senſe of the Term *Generations*, and of Beings *formed by one another*. For Atheiſts, who admit a *Plenum*, reply, that properly ſpeaking there are no Generations, no *produced Beings*, nor indeed any Variety of Subſtances. That the Univerſe is one intire neceſſarily-exiſting Being, which is develloping itſelf inceſſantly; one ſame Being, whoſe Nature it is to be immutable

in its Subſtance, but eternally varying in its Modifications. So that the Argument drawn only from Beings ſucceeding one another, would perhaps have but little Weight againſt the Atheiſt who ſhould deny a Plurality of Beings. We muſt therefore take up other Arms againſt him; we muſt prove to him that Matter can have no Motion of itſelf: We muſt make him ſenſible, that if it has any of the leaſt Motion of itſelf, that Motion muſt be eſſential to it, and that Reſt muſt be conſequently contrary to its eſſential Nature. But if the Atheiſt replies, that Reſt is only a Fiction, an Idea incompatible with the Nature of the Univerſe; and that an infinitely ſubtile Matter eternally circulates through all the Pores of Bodies; if he maintains that there is always an Equality of moving Force in the World, and that this permanent Equality of Force ſeems to prove a neceſſary Motion; we muſt apply then to other Weapons, and he may ſtill lengthen out the Combat. In a Word, I know not if there is any metaphyſical Proof more ſtriking, and more convincing to the Senſe of Mankind, than that admirable Order which appears throughout the World;

World; or a finer Argument than this Verſe of the Scripture, *Cæli enarrant gloriam Dei.* And we find that Sir ISAAC NEWTON uſes no other at the End both of his *Opticks* and his *Principia.*

Suppoſe a Number of conſiderate and rational Beings were to live fifteen Days in ſome Iſland in the North, where, as ſometimes happens towards the End of *May*, eight of thoſe Days ſhould be nothing but Ice and Fog; if immediately after this ſevere Weather, there ſhould be three or four Days of a burning Sun, and exceſſive Heat, and next to them a violent Storm of Wind, tearing all the Trees up by their Roots, and producing Inſects which ſhould deſtroy all the Fruits and Herbage; conceive during theſe fifteen Days, one Quarter of very bright Moonlight, and after that an Eclipſe of the Sun; then ſuppoſe the Light of the Stars ſhould be loſt for ſome Time, that an Earthquake enſued, and ſwallowed up one Part of the Inhabitants, while another Part ſhould die of Hunger and Sickneſs, and another is devoured by wild Beaſts: Theſe rational Beings, finding in ſuch a Chaos of Horrors nothing but Confuſion and Misfortune, would not readily give

give Credit to thoſe metaphyſical Arguments, which prove a Being ſupremely wiſe and beneficent. But place them on the contrary in our Climate, and give them Length of Life ſufficient to examine and admire the regular Courſes of the heavenly Bodies; to enter into the immenſe Detail of the Bleſſings plentifully beſtowed both without and within us; to obſerve every where Principles, Conſequences, and Benefits infinite; and ſurely no metaphyſical Argument can be more forcible than what their own Obſervation will furniſh in the Proof of a ſupremely wiſe and beneficent Being. I have been aſſured that Sir ISAAC thought no Reaſoning more concluſive than what *Plato* puts in the Mouth of one of his Speakers: "You judge (ſays he) that I "have a reaſonable Soul, becauſe you "perceive Order in my Words and Ac-"tions. Judge then, by a Parity of Rea-"ſoning, from your Obſervation of the "Order and Regularity of this World, "that it is actuated by a Soul ſupremely "intelligent."

CHAP.

CHAP. II.

Of SPACE *and* DURATION *conſider'd as Properties of the Deity.*

SIR ISAAC NEWTON conſider'd Space and Duration as two Realities whoſe Exiſtence neceſſarily flows from God himſelf. For the infinite Being is in every Place, and conſequently every Place exiſts; the eternal Being remains through all Eternity, an eternal Duration is therefore real.

Sir ISAAC had happened to ſay, at the End of his Optical Queries, "*Do not* "*theſe Phænomena of Nature demon-* "*ſtrate that there is a living, incorpo-* "*real, intelligent, omnipreſent* Being, "*who in an infinite Space, as in its* Sen- "ſorium, *ſees, diſcerns, and underſtands* "*every thing in the moſt intimate and* "*moſt perfect Manner.*"

The famous LEIBNITZ, who formerly had acknowledged with Sir ISAAC, the Reality

Leibnitz attacks Sir Iſaac Newton.

Reality of pure Space and of Duration; but who had now for a long Time diſcarded all NEWTON's Opinions, and placed himſelf at the Head of an oppoſite School in GERMANY, attacked theſe Words of the *Engliſh* Philoſopher, in a Letter which he wrote in 1715 to the late Queen of *England*, the Conſort of King *George* the Second. This Princeſs, worthy of correſponding both with NEWTON and LEIBNITZ, engaged the two Parties in a regular Diſpute by way of Letters; but Sir ISAAC, who was naturally averſe to all Altercation, and was beſides frugal of his Time, left Dr. CLARKE, his Diſciple in Philoſophy, and at leaſt his Equal in Metaphyſics, to enter the Liſts for him. The Controverſy turn'd on almoſt all the metaphyſical Notions of NEWTON, and it is, perhaps, the fineſt Monument extant of Literary Diſputation.

Dr. CLARKE began, with juſtifying the Compariſon of a *Senſorium* made uſe of by NEWTON; he affirmed that no Being could act, know, or ſee, where it is not; but God, acting and ſeeing every where, acts and ſees in every Point of Space,

Space, which in this Senſe only may be conſidered as his *Senſorium*; allowing for the Impoſſibility we find of expreſſing ourſelves in any Language when we preſume to ſpeak of God.

Leibnitz's Opinion.

LEIBNITZ maintained, that Space is nothing elſe but the Relation which we conceive between co-exiſtent Beings; nothing but the Order of Bodies, according to their Arrangement and Diſtances. CLARKE held, after Sir ISAAC, that the very Suppoſition of the Non-reality of Space, is in itſelf an Abſurdity. For on ſuch a Suppoſition, if God had placed the Earth, the Moon, and the Sun where the fixt Stars are now, provided the Earth, the Sun and the Moon were in the ſame Order to each other as now, it would follow, from thence, that the Earth, the Moon, and the Sun, would have been in the ſame Place *then* as they are at preſent; which is a Contradiction in the very Terms.

The Reaſons and Opinion of Newton.

We muſt, according to NEWTON, judge of Duration in the ſame Manner as we do of Space, *viz.* that it is real. For if Duration were no other than an Order of Succeſſion amongſt the Creatures, it would follow, that what is done to-day,

to-day, and what was done thouſands of Years ago, would be in itſelf done at the ſame Inſtant; which is alſo a Contradiction.

In ſhort, Space and Duration are Quantities, and muſt therefore be ſomething poſitive.

It is proper to give ſome Attention to that ancient Argument which has never yet been anſwered, That if a Man ſhould ſtretch out his Arm at the utmoſt Bound of the Univerſe, that Arm muſt be in pure Space; but it is not in that which does not exiſt: And ſhould it be replied that it is ſtill in Matter, the World in that Caſe muſt be infinite; and if ſo, the World muſt be God.

Pure Space, or *Vacuum*, exiſts then as well as Matter, and even exiſts neceſſarily; whereas Matter only exiſts by the Free-will of the Creator.

Infinity of Matter impoſſible.

The Exiſtence of infinite Matter is in reality a Contradiction in Terms; but, ſay they, you admit an immenſe infinite Space, wherefore then will you not allow the ſame of Matter? Why here lies the Difference; Space exiſts neceſſarily, becauſe God neceſſarily exiſts; it is immenſe; it is like Duration, a Mode or infinite Property of a neceſſary Being that

is

is infinite. Matter is nothing of the ſame Sort; it does not exiſt neceſſarily. And were its Subſtance infinite, it muſt be either an eſſential Property of God, or God himſelf; whereas it is neither the one nor the other; and therefore neither is, nor can be infinite.

I ſhall here inſert an Obſervation, which to me appears to merit ſome Attention.

DESCARTES admitted a God, the Creator and Cauſe of all Things, but denied the Poſſibility of a *Vacuum*. EPICURUS denied a God, Creator and Cauſe of all, but admitted a *Vacuum*. Now, that DESCARTES, according to his own Principles, ſhould have denied a creating God; and that EPICURUS, according to his, ſhould have allowed one, is what I am going to demonſtrate.

Epicurus ought to allow a creating and governing God.

If a *Vacuum* is impoſſible, if Matter be infinite, if Extenſion and Matter are the ſame Thing, Matter muſt be neceſſary. Now if Matter be neceſſary, it muſt exiſt of itſelf, from an abſolute Neceſſity inherent in its primordial Nature, antecedent to every thing; and if ſo, it muſt be God. He therefore who denies the Poſſibility of a *Vacuum*, cannot, if he reaſons from Conſequences, admit any other God but Matter.

On

On the contrary, if there is a *Vacuum*, Matter is not then a neceſſary Being exiſting of itſelf. It was EPICURUS therefore, who ſhould have believed, I do not ſay uſeleſs Gods, but one God, the Creator and Governor of all Things; and DESCARTES who ſhould have denied him. Wherefore then, on the contrary, doth DESCARTES continually ſpeak of the Exiſtence of a creating and preſerving Being, and EPICURUS reject ſuch an Opinion? Why, becauſe Men in their Sentiments, as well as their Actions, ſeldom follow their own Principles, ſo that both their Syſtems and their Lives are Contradictions.

Space is a neceſſary Conſequence of the Exiſtence of God. God, properly ſpeaking, is neither in Space nor in any Place; but God being neceſſarily every where, by that alone conſtitutes immenſe Space and every Place. After the ſame Manner, Duration, or eternal Permanence, is an indiſpenſible Conſequence of the Being of God: He is neither in infinite Duration, nor in Time, but exiſting eternally, conſtitutes thereby both Eternity and Time.

Space,

Space, immenſe, extended, inſeparable, may be conceived in many Portions; for Inſtance, the Space where *Saturn* is, is not the Space where *Jupiter* is; but yet one cannot ſeparate theſe conceived Parts of Space, we cannot put the one into the other's Place, as one may remove one Body into the Place of another.

So likewiſe Duration, infinite, inſeparable, and without Parts, may yet be conceived in many Portions, without one's being able ever to conceive one Portion of Duration ſubſtituted in the Room of another. Beings exiſt in a certain Portion of Duration which we name Time, and may exiſt in all other Time; but any one imagined Portion of Duration, any certain Time can be imagined at no other Time; — the Paſt cannot be Future.

The Properties of pure Space and Duration.

Space and Duration are two neceſſary and immutable Attributes of the eternal and immenſe Being.

God alone can know all Space; God alone can know all Duration. We meaſure ſome Parts, improperly ſo called, of Space, by the Means of extended Bodies which we touch; we alſo meaſure Parts, improperly ſo called, of Duration, by the Means of Motions which we perceive.

Agreement of Sir *Iſaac Newton* with *Gaſſendi*.

We ſhall not enter here into a Detail of the phyſical Proofs, which are reſerved

for other Chapters; it ſuffices to obſerve at preſent, that in every Thing which relates to Space, Duration, or the Bounds of the World, Sir ISAAC has followed the ancient Opinions of DEMOCRITUS, EPICURUS, and a great Number of Philoſophers as amended by our celebrated GASSENDUS. He has often ſaid to ſome *French* People who are ſtill alive, that he looked on GASSENDUS as one of a juſt and wiſe Apprehenſion; and that he gloried in being perfectly of his Opinion in every Thing which we have been now ſpeaking of. So that when Sir ISAAC admitted Space or a *Vacuum*, and Duration, in the Senſe we have been explaining; when he ſuppoſed the World finite, and admitted ſeveral Particles of Matter, and Atoms, as we ſhall hereafter give an Account, he had no Intention to invent a new Syſtem, ſince theſe Opinions have been received in all Ages; nor was it from a vain Deſire of eſtabliſhing a Philoſophy contrary to that of the *French*, as ſome have pretended, for GASSENDUS was a *Frenchman*. I can affirm, that he only ſought after Truth, with the greateſt Sincerity a human Heart was capable of, and with the greateſt Lights that ever God granted to a Man.

CHAP.

CHAP. III.

Of Liberty in GOD, *and of the grand Principle of ſufficient Reaſon.*

SIR ISAAC NEWTON maintained, that God, infinitely free, as well as infinitely powerful, has done many Things, which have no other Reaſon for their Exiſtence than his Will only.

For Example, that the Planets move from Weſt to Eaſt rather than contrariwiſe; that there is one certain Number of Animals, Stars and Worlds, rather than another; that the finite Univerſe is in ſuch or ſuch a Point of Space, *&c.* are Things whereof the Will of the ſupreme Being is the ſole Cauſe.

Principles of *Leibnitz.*

Mr. LEIBNITZ was of a contrary Opinion, which he founded on the ancient Axiom formerly made uſe of by ARCHIMEDES. Nothing is done, ſays he, without ſufficient Cauſe or Reaſon, and God

in every Caſe has done what is beſt; for if he had not done it as the beſt, he would have had no Reaſon for the doing it. But, ſay the *Newtonians*, in Things indifferent there is no beſt; to which the *Leibnitzians* reply, that there are no indifferent Things at all. Your Notion, ſays Dr. CLARKE, carries an abſolute Fatality along with it; you make God a Being acting by Neceſſity, and conſequently a Being meerly paſſive: This is not God. Your God, ſays LEIBNITZ, is a capricious Workman, who is determined without ſufficient Reaſon. The Will of God is ſufficient Reaſon, anſwers the *Engliſh* Philoſopher. LEIBNITZ inſiſts on his Opinion, and attacks his Antagoniſt very ſtrongly in this Manner.

Carried perhaps too far.

His Reaſonings very ſeducing.

We know not, ſays he, any two Bodies perfectly alike in Nature, nor can there indeed be two ſuch; for if they were alike exactly, that would not only imply a Deficiency of Fecundity and Power in an omnipotent and all-productive God; but withal, there would be no Reaſon why the one ſhould be in this or that Place rather than the other.

Anſwer.

The *Newtonians* reply to this, that it is not true that many ſimilar Beings would imply any Want of Power in the Creator.

For

For if the Elements of Things ought to be abſolutely alike to produce like Effects; if for Example, the Elements of the eternally red Rays of Light ought to be the ſame to afford ſuch red Rays; if the Elements of Water ought to be the ſame to form Water, this perfect Reſemblance, this Identity, far from derogating from the Grandeur of God, is one of the faireſt Witneſſes of his Power and Wiſdom.

Might I preſume to add ſomething here to the Arguments of a CLARKE and a NEWTON, and take the Liberty to diſpute with a LEIBNITZ, I ſhould affirm, that none but an infinitely powerful Being could make Things perfectly ſimilar. Whatever Pains a Man ſhould take to do ſo, he never could be able to perform it; for his Sight could never be ſharp enough to diſcern all the Inequalities of two Bodies: He muſt diſtinguiſh infinite Minuteneſs, to render all the Parts of one Body like thoſe of another; and to do this, belongs only to an infinite Being.

Secondly, The *Newtonians* might ſay, we will fight LEIBNITZ at his own Weapons. If the Elements of all Things are different, if the firſt Particles of a red Ray are not intirely alike, where then is

ſufficient Reaſon why different Particles ſhould always give the ſame Colour?

Thirdly, If you enquire the ſufficient Reaſon why this Atom A is in one Place, and this other Atom B, exactly like it, is in another Place; the Reaſon is, the Motion which impells them; and if you require the Reaſon of this Motion, you are obliged either to allow this Motion to be neceſſary, or you muſt declare it was begun by God. But then, ſay you, why did God begin it? What more ſufficient Reaſon can you find, than that God muſt have ordered this Motion for the Execution of thoſe Things which his Wiſdom had projected? But why is this Motion to the Right rather than to the Left, toward the Weſt rather than towards the Eaſt? In this Point of Direction rather than in another? Muſt we not here have recourſe to the Will of Indifference in the Creator? ——This we leave to the Examination of every impartial Reader.

CHAP.

CHAP. IV.

Of Liberty in MAN.

ACcording to Sir ISAAC NEWTON and Dr. CLARKE, the Being that is infinitely free, has communicated to his Creature Man, a limited Portion of this Liberty; and we do not here underſtand by Liberty, the Power ſimply of applying his Thoughts to ſuch or ſuch an Object, and to begin Motion; we underſtand by it not only the Faculty of willing, but that of willing freely, with a full and efficacious Will; and even of being ſometimes able to will, without any other Reaſon but meerly his own Will. There is no Man on Earth who doth not ſometimes find he is poſſeſſed of this Liberty. However, many Philoſophers think otherwiſe: They believe that all our Actions are neceſſary, and that we have no other Liberty but that of ſome-

times bearing thoſe Chains willingly, wherewith we are held by Fatality.

An excellent Work againſt Liberty.

Of all the Philoſophers who have boldly wrote againſt this Liberty, the Perſon who has done it undoubtedly with the moſt Method, Force, and Clearneſs, was Mr. COLLINS, the Author of a Book on *Free-thinking*, and of many other Works no leſs bold than philoſophical.

So good that Dr. *Clarke* makes an ill-grounded Reply to it.

Dr. CLARKE, who was intirely of Sir ISAAC NEWTON's Opinion as to Liberty, and who maintained its Rights as well in the Character of a Divine of a particular Sect, as in that of a Philoſopher, gave a lively Reply to COLLINS, and mingled ſo much Sharpneſs with his Reaſons, as to ſhew at leaſt he felt all the Force of his Adverſary's Arguments. He reproached him with confounding all Ideas, in that COLLINS called Man a neceſſary Agent: He ſaid, in that Caſe he was not an Agent. But who perceives not this to be meer Chicanery? COLLINS called every thing an Agent that produced neceſſary Effects. But what does it ſignify whether ſuch a Being is called Agent or Patient? The Point is only to know whether it is neceſſarily determined.

For

For my own Part, I think, that if we could meet with one ſingle Inſtance where Man is abſolutely free with a Liberty of Indifference, that would decide the Queſtion. But what Inſtance ſhould we make uſe of, except that only which tries our Liberty? It is propoſed, for Example, that I ſhould turn to the Right or to the Left, or do any other Thing which no Pleaſure induces me to, nor any Diſlike diverts me from. I chuſe: And here certainly I am not dictated to by my Reaſon, which repreſents to me what is beſt, ſince there is neither better nor worſe in the Caſe. What do I do then? I exert the Right given me by my Creator, of willing and acting, in ſome certain Caſes, without any other Reaſon than that of my own Will. I have a Right and a Power to begin Motion, and that on which Side I pleaſe. If no other Cauſe for my Will can be aſſigned, then why do we ſeek for it any where but in that Will itſelf? It therefore appears probable, that we have the Liberty of Indifference in Things that are indifferent. For who can ſay that God has not or cannot give it us? And if he can, and we perceive

Liberty of Indifference.

ceive this Power in ourſelves, what Arguments can convince us that we have it not? I have often heard this Liberty of Indifference treated as a chimerical Notion. It has been objected, that to be determined without Reaſon is only the Part of mad Men. But then it was not conſidered that mad People are ſo diſtemper'd as not to have any Liberty. They are determined neceſſarily, through the Default of their Organs; they are not their own Maſters; nor have they any Choice; he only is free, who determines himſelf. Now why ſhould not we determine ourſelves by Will alone in Things that are indifferent?

Liberty of Spontaneity.

In all other Caſes we have the Liberty of Spontaneity; that is, when we have Motives, our Will is determined by them; and theſe Motives are always the laſt Reſult of the Underſtanding. For Inſtance, when my Underſtanding informs me that it is better for me to obey the Law than to violate it, I obey the Law with a ſpontaneous Liberty; I do what the laſt Dictate of my Underſtanding obliges me to do.

We

We are never more ſenſible of this Kind of Liberty, than when our Will contends with our Deſires. I have ſome violent Paſſion, but my Underſtanding concludes that I ought to reſiſt this Paſſion: It repreſents to me a greater Good in the Conquering, than in the Gratification of my Deſire; this laſt Motive overcomes the other, and my Deſire gives Way to my Will. I obey neceſſarily, but yet willingly, this Dictate of my Reaſon. What I do, is not what I deſire, but what I will; and in this Caſe I am free, with all the Liberty ſuch a Circumſtance can leave me ſuſceptible of.

Laſtly, I am not free in any Senſe when my Paſſion is too ſtrong, and my Underſtanding too weak, or when my Organs are out of Order; and unhappily this is too often the Caſe with Men. So that it appears to me, that ſpontaneous Liberty is to the Soul what Health is to the Body: Some Perſons enjoy a perfect and laſting Health; many are ſick often, and others all their Lives. I alſo find, that all the other Faculties of Man are ſubject to the ſame Inequalities. Sight, Hearing, Taſte, Strength, the Gift of Thinking, are ſometimes ſtronger, ſometimes weaker.

A Deprivation of Liberty a very common Thing.

er. Our Liberty is, like all our other Powers, limited and variable: In a Word, it is very inſignificant, as we ourſelves are very inſignificant alſo.

The Difficulty of making the Liberty of Man's Actions agree with the eternal Preſcience of God was no Stop to Sir ISAAC NEWTON, as he did not entangle himſelf in that Labyrinth. Liberty once eſtabliſhed, it is not for us to determine how God foreſees what we ſhall do freely. We know not how God actually ſees what paſſes; we have no Idea of his Manner of ſeeing; why then ſhould we have any of his Manner of foreſeeing? All his Attributes muſt be equally incomprehenſible to us.

CHAP.

CHAP. V.

Of Natural Religion.

MOnſieur LEIBNITZ, in his Diſpute with Sir ISAAC NEWTON, reproaches him with giving very low Ideas of God, and with annihilating of Natural Religion. He pretends that Sir ISAAC made God corporeal; which Imputation, we may plainly perceive was founded on the Word *Senſorium*, *an Organ*, which is made uſe of by Sir ISAAC. He adds, that Sir ISAAC's God has made a very bad Machine of this World, if it has Need of *cleaning* *; Sir ISAAC having ſaid, *Manum emendatricem deſideraret*. This Reproach is grounded on Sir ISAAC's ſaying, that in Time the Motions will diminiſh, the Irregularities of the Planets will increaſe, and the Univerſe will periſh, unleſs put again in order by its Author.

Leibnitz reproaches Sir *Iſaac Newton*.

Expe-

* The Word Mr. *Leibnitz* uſes is *decraſſée*.

On very ſlender Foundations.

Experience plainly ſhews, that God has made Machines to be deſtroyed. We are the Work of his Wiſdom, and we periſh; why ſhould not the World do ſo too? LEIBNITZ would have the World perfect; but if God has made it to endure only a certain Time, its Perfection then conſiſts in laſting no longer than the Inſtant fixed for its Diſſolution. As for Natural Religion, never was any Man a greater Supporter of it than NEWTON, except perhaps the wiſe LEIBNITZ himſelf, his Rival in Knowledge and Virtue. I here underſtand by Natural Religion, the Principles of Morality common to human Kind. Sir ISAAC NEWTON admitted in reality no innate Notions in us, neither Ideas, Sentiments, nor Principles. He was perſwaded with Mr. LOCKE, that all our Ideas come to us by our Senſes, according as our Senſes exert themſelves. But he believed that God, having given the ſame Senſes to all Men, there muſt reſult therefrom the ſame Wants, the ſame Sentiments, and conſequently the ſame general Notions, which are throughout the World the Foundation of Society. We conſtantly find that God gives to Bees and Ants, ſome-

ſomething to make them live together, which he has not given to Wolves or Falcons. It is certain, from all Men's living in Society, that there is in their Nature a ſecret Tye, whereby God has pleaſed to attach them to one another: It is alſo very certain, that if, at a particular Age, the Ideas, which come by the ſame Senſes to Men whoſe Organs are the ſame, were not to give them, by Degrees the ſame Principles neceſſary for every Society, theſe Societies could not ſubſiſt. This then is the Reaſon why from *Siam* to *Mexico*, Truth, Gratitude, Friendſhip, *&c.* are eſteemed.

A Confutation of one of Mr *Locke*'s Opinions.

I have always been ſurprized that the great Mr. LOCKE, in the Beginning of his Treatiſe on *Human Underſtanding*, where he ſo well confutes the Notion of innate Ideas, ſhould alſo have advanced that there is no Notion of Good and Evil common to all Mankind. I believe he is there fallen into a great miſtake, from building his Opinion on the Accounts of Travellers; who relate, that in certain Countries it is the Cuſtom to eat Children, and even to eat the Mothers when they become paſt Child-bearing; that in others, they honour with the Title

of Saints, certain Enthuſiaſts, who make uſe of She-Aſſes inſtead of Women. But ſhould not ſuch a Man as Mr. LOCKE have ſuſpected theſe Travellers? Nothing is more common amongſt them than to ſee Things badly, to give a bad Account of what they have ſeen, to take that (in a Nation whoſe Language they do not underſtand) for a Law itſelf, which is only an Abuſe of the Law; and laſtly, to make a Judgment of the Manners of a whole People from ſome particular Fact, the Circumſtances of which they are unacquainted with.

If a *Perſian* was to paſs thro' *Liſbon*, *Madrid*, or *Goa*, on the Day of an *Auto da Fé*, he would think, not without ſome Appearance of Reaſon, that the Chriſtians ſacrifice Men to God: If he reads the Almanacks which are diſperſed among the common People throughout all *Europe*, he would think that we aſcribed every Thing to the Influence of the Moon; whereas at the ſame Time, ſo far from believing ſo, we laugh at it. Thus, if a Traveller tells me, for Example, that the Savages eat their own Parents out of Piety: In the firſt Place he muſt give me leave to ſay that the

Fact

Fact is very dubious; and ſecondly, ſuppoſing it is true, far from deſtroying the Idea of the Reſpect due to Parents, it is probably a barbarous Way of ſhewing a Tenderneſs towards them, an horrible Abuſe of the Law of Nature. For certainly the Savage kills his Father and Mother out of Duty only, to deliver them either from the Troubles of old Age, or the Fury of the Enemy: And if after that he makes his own Body their Tomb, inſtead of leaving them to be devoured by the Conquerors, this Cuſtom, frightful as it is to the Imagination, nevertheleſs neceſſarily ariſes from the Goodneſs of his Heart. Natural Religion conſiſts in nothing more than this Principle, which is known throughout all the World, "*Do as thou wouldſt* "*be done by.*" Now the Barbarian, who ſlays his Father to ſave him from his Enemy, and who entombs him within himſelf for Fear his Enemy ſhould become his Tomb, wiſhes his own Son may uſe him ſo in the like Caſe. This Law of treating one's Neighbour like one's ſelf, naturally flows from even the groſſeſt Notions of Things, and ſooner or later enters into every Man's Heart: For

all having the ſame Reaſon implanted there, it muſt ſooner or later produce the ſame Fruits; and it does indeed produce ſo much the ſame, that in every Society, that which is thought uſeful to that Society is called by the Name of Virtue.

If there can be found a Nation, or only a Company of ten Perſons on Earth, where what is conducive to the Good of the Community is not eſteemed, I will agree that there is no Natural Rule. Undoubtedly this Rule varies *ad infinitum*, but muſt we then conclude it does not exiſt? The Subſtance of it receives different Forms throughout, but yet throughout retains its Nature.

We are told, for Example, that at *Lacedæmon* Theft was commanded. Now this is nothing but an Abuſe of the Terms. What we call Theft was not ordered at *Lacedæmon*. In a City where all Things were in common, the Permiſſion which was given to take away dexterouſly what particular Perſons appropriated to themſelves contrary to the Law, was a Way of puniſhing the Deſire of private Property, forbid among that People: *Thine* and *Mine* was a Crime, whereof what we term Theft was the Puniſhment; and there was amongſt them,

them, as well as among us, a Rule by which God has made us, as he has made the Ants, to live together.

This Diſpoſition which we all have for Society, Sir ISAAC NEWTON ſuppoſed to be the Foundation of the Law of Nature, which Chriſtianity has made perfect. The Good of Society Natural Religion.

There is moreover in Mankind a Diſpoſition to Compaſſion, which is as general as our other Inſtincts. Sir ISAAC cultivated this Sentiment of Humanity, and even extended it to Brutes, being ſtrongly convinced with Mr. LOCKE, that God has given to them (who ſeem to be only Matter) a Portion of Ideas, and the ſame Sentiments as to us. He could not believe that God, who has done nothing in vain, would give to Beaſts Organs of Senſe, in order that they ſhould have no Senſe.

He thought it a very ſhocking Contradiction to believe that Beaſts have Senſe, and yet to make them ſuffer. His Morality in this Point agreed with his Philoſophy. It was not without Reluctance that he comply'd with the barbarous Cuſtom of nouriſhing ourſelves with the Fleſh and Blood of Beings that are Humanity.

like us, and which we are continually careſſing; and he never would allow them in his Family, to be deſtroyed by ſlow and lingring Deaths, in order to render their Fleſh more delicious.

This Compaſſion which he had for Animals, was turned into a true Charity for Men. And indeed, without Humanity, that Virtue under which all other Virtues are comprehended, no one can deſerve the Name of a Philoſopher.

CHAP.

CHAP. VI.

Of the Soul. Of the Manner in which it is united to the Body, and how it receives its Ideas.

SIR ISAAC NEWTON was of Opinion, with almoſt all other Philoſophers, that the Soul is a ſimple, immaterial, unperiſhable Being; but many who were well acquainted with Mr. LOCKE, have aſſured me, that Sir ISAAC confeſſed as well as he, *that our Knowledge of Nature is not ſufficient to juſtify us in affirming, that it is impoſſible for God to add the Gift of Thinking to any extended Being whatever.* The great Difficulty is to know how any Being whatever can think, rather than to know how Matter can be brought to think. Thinking has indeed nothing in common with the Attributes we know of that extended Be-

Enquiry whether Matter can think.

ing which we call Body: But are we acquainted with all the poſſible Properties of Bodies? It would ſeem very inſolent to ſay to God, Thou haſt been able to give Motion, Gravitation, Vegetation, and Life to a Being, but Thou canſt not give it a Power to think.

Let us here examine whether thoſe, who ſay, that if Matter could receive the Gift of Thinking, the Soul would not be immortal, reaſon from Conſequences. Is it more difficult for God to preſerve than to create? Moreover, if an inſeparable Atom can endure to Eternity, why may not the Gift of Thinking therein, endure in like Manner? If we diſallow to God the Power of giving or joining Ideas to Matter, we muſt be obliged to own, that what we call Spirit is a Being whoſe Eſſence is to think, excluſive of all extended Being.

And if it is the eſſential Property of Spirit to think, it muſt then think neceſſarily; and if ſo, it is a Being that thinks independently of God, in the ſame manner as every Triangle has three Angles neceſſarily and independently of God.

Whether is it then the moſt reſpectful towards the Deity, to affirm that created Beings can think independently of Him, or

or to ſuppoſe that he can beſtow a Power of Thinking on any Being he pleaſes?

We may hereby plainly perceive how unjuſtly ſome have looked upon Mr. LOCKE's Opinion as criminal, and with the Arms of Religion have combated moſt cruelly and maliciouſly againſt a Notion that is meerly philoſophical.

Sir ISAAC NEWTON was very far from attempting to give a Definition of the Soul, as ſo many others have preſumed to do, believing it highly probable, that there are Thouſands of other thinking Subſtances, whoſe Nature is abſolutely different from that of our Souls. And if ſo, the Diviſion that ſome have made of all Nature into Body and Spirit, is like a Man's defining the Senſes, who being himſelf blind and deaf, can imagine no ſuch Thing as either Sight or Hearing. What Foundation have we to ſay, that God has not filled the immenſe Space with an Infinity of Subſtances which have nothing in common with us?

Sir ISAAC had not made any Syſtem concerning the Manner of the Soul's Union with the Body, or about the Formation of Ideas. Being an Enemy to all Syſtems, he formed no Judgment of any thing but by the way of Analyſis;

and when this Light failed him, he well knew how and where to ſtop.

Four Opinions on the Formation of Ideas.

There have been four Opinions in the World concerning the Formation of Ideas. The firſt is that of almoſt all the ancient Nations, who conceiving nothing above Matter, have looked on the Ideas in our Underſtanding, as the Impreſſion of a Seal on Wax. But this confuſed Opinion was rather a groſs Inſtinct than a Reaſoning. The Philoſophers, who, in Conſequence of this, have endeavoured to prove that Matter thinks of itſelf, have been ſtill more miſtaken; for the Vulgar only erred without Reaſoning, whereas theſe Philoſophers went wrong upon Principles: No one of them has ever yet been able to diſcover any thing in Matter, which could prove Underſtanding eſſential to its Nature.

That of the ancient Materialiſts.

Mr. Locke appears to be the only one who has taken off the Contradiction between Matter and Thinking, by having recourſe to the Creator of all Thought and all Matter, and by ſaying modeſtly, Cannot he who is able to do every Thing, make a material Being, an Atom, or an Element of Matter think? He has reſted at this Poſſibility like a wiſe Man. To affirm

firm that Matter really thinks, becauſe God can communicate this Gift to it, would be great Raſhneſs;— But is it leſs Preſumption to affirm the contrary?

The ſecond Opinion, and which is the moſt generally received, is that, which maintaining the Soul and the Body to be two Beings, having nothing in common one with the other, at the ſame time affirms, that God has created them to act on one another. The only Proof we have of this Action is the Experience that every one thinks he has of it; we find that our Bodies ſometimes obey our Wills, and ſometimes maſter them. That which is generally received.

We imagine that they really act on one another, becauſe we perceive they do ſo; and it is impoſſible for us to carry our Enquiry farther. There is an Objection however to this Syſtem, which ſeems impoſſible to be anſwered: If any outward Object, for Example, communicates a Vibration to our Nerves, this Motion either extends to our Soul, or it does not; if it does, it communicates a Motion to it, which would ſuppoſe the Soul corporeal; and if it does not, all Action ceaſes. Our Reply to this can only be, that

that this Action may be reckoned among thoſe Things whoſe Mechaniſm will be for ever unknown.— A melancholy Concluſion indeed, yet almoſt the only one a Man can make in more than one Point of Metaphyſics!

Malle-branche's Syſtem.

The third Syſtem is that of MALLEBRANCHE's occaſional Cauſes. He begins with ſuppoſing that the Soul can have no Influence on the Body; whereby he advances too much; for it does not follow that ſuch an Influence is impoſſible becauſe we cannot conceive it. He then ſuppoſes that Matter, as an occaſional Cauſe, makes an Impreſſion on our Bodies; and that God then produces an Idea in our Souls: That reciprocally Man produces an Act of Volition, in Conſequence of which God acts immediately on the Body; ſo that Man neither acts nor thinks but in God; which, I apprehend, cannot be made in any Manner intelligible, without ſaying, that it is God alone who acts and thinks for us.

The Difficulties reſulting from this Hypotheſis are enough to overwhelm us; for how can Man, (according to this Syſtem) have a Power of Willing, and yet

yet not have in himſelf a Power of Thinking? If God has not given us a Faculty of producing Motion and Ideas; if it is he alone that acts and thinks, it is he alone that wills. We are not only no longer free, but we are even nothing, unleſs we are Modifications of God himſelf. In this Caſe there is no longer a Soul, or Underſtanding in Man, nor is it worth thinking how to explain the Union of the Body with the Soul, becauſe that Soul has no Exiſtence, and God alone is the exiſting Being.

Leibnitz's Opinion.

The fourth Opinion is that of the pre-eſtabliſhed Harmony of LEIBNITZ. According to this Hypotheſis the Soul has no Commerce with its Body: They are two Clocks of God's making, each having a ſeparate Spring, which go together for a ſet Time with an exact Correſpondence; one ſhowing the Hour, and the other ſtriking. The Clock which ſhews the Hour, does not do ſo becauſe the other ſtrikes; but God has eſtabliſhed their Motions in ſuch a Manner, that the Hand-Clock and the Striking-Clock continually agree. Thus the Soul of VIRGIL produced the *Æneid*, and his Hand wrote the ſame *Æneid*: This however

ever the Hand did not perform out of any Obedience to the Author's Intention; but God had ordered, that whenever the Soul of VIRGIL compoſed a Verſe, a Hand belonging to VIRGIL's Body ſhould put that Verſe into Writing.

To ſay nothing of the extreme Difficulty of reconciling Liberty with this preeſtabliſhed Harmony, this Opinion is liable to a very ſtrong Objection; which is, that if, according to LEIBNITZ, nothing is done without a ſufficient Reaſon ariſing from the Nature of Things, what Reaſon can be given for God's uniting two incommenſurable Beings, two Beings ſo heterogeneous, ſo infinitely different as the Body and the Soul are, the one whereof has no Influence in any Thing over the other? My Soul might then as well be placed in *Saturn* as in my Body, and the Union of the Body with the Soul would be unneceſſary. But the reſt of Mr. LEIBNITZ's Syſtem is much more extraordinary. The Principles of it may be ſeen in the Supplement to the Acts of *Leipſick*, Tom. VII. We may alſo conſult the large Comments made thereupon in a geometrical Manner by many *German* Writers.

According

According to Mr. LEIBNITZ, there are four Sorts of ſimple Beings which he calls *Monades*, a further Account of which will be given in the Eighth Chapter. We ſhall here mention only that Kind of *Monade*, which we call the Soul. *The Soul*, ſays he, *is a Concentration, a living Mirror of the whole Univerſe*, which has in itſelf confuſed Ideas of all the Modifications of this World, as well thoſe to come, as the paſt and the preſent.

Sir ISAAC NEWTON, Mr. LOCKE, and Dr. CLARKE, when they heard this Opinion publiſhed, treated it with as much Contempt as if LEIBNITZ had not been its Author. But as ſome very great *German* Philoſophers have made it their Glory to explain what no *Engliſhman* would ever take the Trouble of underſtanding, I think myſelf obliged to ſet forth this Hypotheſis of the famous LEIBNITZ, which appears to deſerve more Reſpect, eſpecially ſince it is become the Subject of your Enquiry.

Every ſimple created Being, ſays he, is liable to Change, without which it would be God: The Soul is a ſimple created Being, it cannot then remain always

ways in the ſame Condition; but Bodies, being compounded, are unable to make any Alteration in a ſimple Being; its Changes therefore muſt have their Source in its own Nature. Theſe Changes then are the ſucceſſive Ideas of the Things of this Univerſe. It has ſome of them very clear; but the Things of this World, ſays LEIBNITZ, are ſo dependent on one another, ſo conſtantly linked together, that if the Soul has a clear Idea of one of theſe Things, it neceſſarily has Ideas, although confuſed and obſcure, of all the reſt.

We may, to explain this Opinion, bring the Example of a Man who has a clear Idea of a Game, and has at the ſame Time many confuſed Ideas of the ſeveral Combinations of that Game. A Man who has actually a clear Idea of a Triangle, has an Idea likewiſe of the many Properties of a Triangle, which may in their Turns preſent themſelves more clearly to his Mind. In this Senſe it is that the *Monade* of a Man is a living Mirror of the Univerſe.

Leibnitz's Opinion anſwer'd.

It is eaſy to object to ſuch an Hypotheſis, that if God has made a Mirror of our Souls, it is a very dull one; and if we have

have no other Reaſons for advancing ſuch extraordinary Suppoſitions, but the pretended indiſpenſible Tie, whereby all the Things of this World are imagined to be linked together, we build this daring Structure on an imperceptible Foundation. For when we have a clear Idea of a Triangle, it is from our having a Knowledge of the eſſential Properties of a Triangle: And if the Ideas of all theſe Properties do not all at the ſame Inſtant offer themſelves clearly to our Minds, they are however exiſting, and are included in this clear Idea; becauſe they have of Neceſſity a Relation one to another. But is the whole Aſſemblage of the Univerſe concerned in this Caſe? Take any one Property from a Triangle, you take away the Whole; but if one Grain of Sand be taken from the Univerſe, will all the reſt be changed? If of a hundred Millions of Beings, which follow one another by Two's and Two's, the firſt two change Place with one another, do the reſt neceſſarily change their Places with each other alſo? Do they not preſerve the ſame Relations to one another? Beſides, have the Ideas of a Man the ſame Train that we ſuppoſe in the Affairs of this World? What

What Connection, what neceſſary Medium is there between the Ideas of Sleep, and thoſe of the unknown Objects I ſee in Waking? What Chain is there between the ſhort Appearance of dying in a deep Sleep or a fainting Fit, and the Ideas we find on recovering our Spirits? But even if it was poſſible that God ſhould have made every Thing as LEIBNITZ ſuppoſes, muſt we believe it on a bare Poſſibility? What has he proved by all theſe new Endeavours, unleſs that he had a very great Genius? But is he enlighten'd himſelf by this Means, or has he been able to give any clear Information to others?

If Enquiry be made what were Sir ISAAC NEWTON's Thoughts concerning the Soul, and the Manner of its Operations, and which of all theſe Opinions he embraced; I ſhall anſwer, that he followed none of them. What then did he know of this Matter, he who had ſubjected Infinity to a Calculation, and diſcovered the Laws of Gravitation? *&c.* Why, he knew how to doubt.

CHAP.

CHAP. VII.

Of the First Principles of MATTER.

IT is not our Buſineſs here to examine which Syſtem was the moſt ridiculous, that which made Water to be the firſt Principle of every thing, that which attributed the ſame *Thing* to Fire, or that which ſuppoſed a Number of Dice-like Bodies, plac'd without any Interſtices on one another, and turning, I know not how, among themſelves.

Examination of primary Matter.

The moſt plauſible Opinion has always been, that there is a primary Matter, indifferent to all Purpoſes, uniform, and capable of receiving all Forms, which, combin'd in different Manners, conſtitutes this Univerſe The Elements of this Matter are always the ſame, but it is modified variouſly according to the various Moulds it paſſes through; as Metal in Fuſion may become either an Urn or

a Statue. This was the Opinion of the great DESCARTES, and agrees very well with his ingenious but chimerical Syſtem of the Three Elements.

Sir ISAAC NEWTON had the ſame Notion of Matter in this Point with DESCARTES; but he came to this Concluſion by other Means. As he very ſeldom formed any Judgment, which was not founded either on Mathematical, or Experimental Evidence, he thought the following Experiment ſufficient for him to build upon. The illuſtrious Mr. ROBERT BOYLE, the Founder of Natural Philoſophy in *England*, had for a long Time kept a Quantity of Water in a Retort expos'd to an equal Fire; the Chymiſt who wrought under him, thought that at laſt the Water was converted into Earth. The Fact however was falſe, as BOERHAAVE, no leſs an exact Philoſopher than a ſkillful Phyſician, has ſince prov'd; for the Water was evaporated, and the Earth which appeared in it's Place was extraneous.

Boyle and *Newton* deceiv'd by a falſe Experiment.

How diſtruſtful ſhould we be of Experiments, ſince both BOYLE and NEWTON were deceiv'd by this! Theſe great Men

Men made no Difficulty to believe, that ſince the primitive Parts of Water were chang'd into the primitive Particles of Earth, the Elements of Things are only the ſame Matter differently arrang'd.

If this falſe Experiment had not miſled Sir ISAAC to this Concluſion, it is probable he would have reaſon'd in a very different Manner.

I muſt deſire what follows may be read with Attention.

Primary Matter confuted:

The only Manner in which Man can reaſon upon Objects, is by Analyſis; to come all at once to the firſt Principles, belongs to God alone; and if God may, without Blaſphemy, be compar'd to an Architect, and the Univerſe to a Building, what Traveller on ſeeing part of the Outſide of an Edifice, will preſume inſtantly to imagine all the Contrivance within it? Yet this is what almoſt all Philoſophers have dar'd to do with a thouſand times more Raſhneſs.

Let us then examine this Edifice as much as we can: What do we find around us? Animals, Vegetables, Minerals (under which Head are comprehended all Kinds of Salts, Sulphurs, *&c.*) Mud, Sand, Water, Fire, Air, and no-

thing elſe, at leaſt that we at preſent know of.

Before we examine whether theſe Bodies are mixt or not, I muſt aſk myſelf whether it is poſſible, that a pretended uniform Matter, which in itſelf is nothing, ſhould yet produce every thing that is.

1*ſt*. What is this primary Matter, which is itſelf none of the Things of the World, and yet produces them all? It is what I can have no Idea of, and therefore ought not to admit. I can form to myſelf, 'tis true, a general Idea of an extended, impenetrable, and figurable Subſtance, without determining my Thoughts either to Sand, Dirt, Gold, *&c.* and yet this Matter either is in reality one of theſe Things, or it is nothing at all. In like Manner, I can think of a Triangle in general, without fixing my Mind either on an equilateral, ſcalene, or iſoſceles Triangle; but nevertheleſs every Triangle that exiſts muſt be one or other of theſe. This Idea alone well attended to, may perhaps be ſufficient to deſtroy the Opinion of a primary Matter.

2*dly*. If any Matter whatever, put in Motion, were capable of producing what we

we ſee upon the Earth, there would be no Reaſon why Duſt well ſhook about in a Veſſel ſhould not produce Men and Trees, nor why a Field ſow'd with Corn ſhould not bring forth Whales or Lobſters, inſtead of Wheat.

It ſignifies nothing to reply, that the Moulds, the Cavities which receive the Seeds prevent it; for this Queſtion will always then recur: How came theſe Moulds, theſe Cavities, to be ſo invariably of a determined Figure?

But if no Motion, no Art has ever yet been able to make Fiſhes ſpring up in the Fields inſtead of Corn, to produce Medlars inſtead of a Lamb in the Belly of a Sheep, Roſes at the Top of an Oak, or Soals in a Hive of Bees, *&c.* if every Species continues invariably the ſame; have I not then good Reaſon to believe, that every Species has been determin'd by the Maſter of the Univerſe? That there are as many different Deſigns as there are different Species of Things; and that Matter and Motion without ſuch Deſigns would be an eternal Chaos?

All my Obſervations confirm me in this Sentiment. If I examine on the one

hand a Man and a Silk-worm, on the other a Bird and a Fiſh, I find them all form'd from the very Beginning of Things, and ſee in them a Diſenvellopement only. That of the Man and the Inſect have ſome Things in common, and ſome that are different; that of the Fiſh and the Bird have others. We are Worms before we are received into our Mother's Womb; we become Nymphæ or Chryſalides in the Uterus; where we remain involved in Integuments till we come out of it with Arms and Legs, as the Worm when become a Fly iſſues from his Tomb with Wings and Feet. We like him live for a few Days, and our Bodies, like his, at length diſſolve away. The Fiſh and the Bird come out of Eggs emitted from the Matrix of one of their own Species; Shell-Fiſh are produc'd in another Manner; Vegetables and Minerals are ſtill another Kind of Productions. Every Being is a ſeparate World; and far from a blind Matter producing every Thing by a ſimple Motion, it is very likely that God has form'd an Infinity of Beings after an infinite Number of Ways, as he himſelf is infinite.

I am

I am perſuaded of the above on a general Conſideration of Nature; but if I enter into a Detail, and make Experiments on divers Things, the Reſult of them is this.

I examine mixt Bodies, ſuch as Animals and Vegetables; and, by analyzing, draw from them ſome groſs Elements, ſuch as Spirit, Oyl, Sulphur, Salt, and *Caput mortuum*; I find other Bodies, ſuch as Metals and Minerals, from which I can never produce any thing but their own ſimple Particles more attenuated. From pure Gold nothing can be obtain'd but Gold. From pure Mercury you can never have any thing but Mercury. Sand, ſimple Dirt, or plain Water, cannot be chang'd into any other Species of Beings.

What can I conclude from hence, but that Vegetables and Animals are compos'd of theſe other primitive Beings which can never be deſtroy'd? Theſe primary, unalterable Beings are therefore the Elements of Bodies. The Man and the Fly are then Compoſitions of the Mineral Particles of Dirt, Sand, Fire, Air, Sulphur, and Salt; and all theſe primitive and for ever indiviſible Particles are Ele-

ments, of which each has it's proper, and invariable Nature.

There are no real Tranſmutations.

None ſhould preſume to affirm the contrary, without having ſeen ſome Tranſmutations; but what ſingle Tranſmutation has been ever yet diſcover'd by the Help of Chymiſtry? Is not the Philoſopher's Stone look'd upon as an Impoſſibility by every wiſe Man? And is it any more poſſible, in the preſent Condition of the World, to change Salt into Sulphur, Water into Earth, Air into Fire, than to make Gold by the Powder of Projection?

Have not thoſe who gave Credit to what is properly called Tranſmutation, been as much deceived by Appearances, as thoſe who believ'd that the Sun mov'd? But were we to ſee Corn and Water converted into human Bodies, into Fleſh and Blood, who would doubt of a Tranſmutation? And yet would this be any thing more than a different Arrangement of the Salts, Sulphurs, Earth, *&c.* in the Corn and in a human Body? The more I reflect, the more a Metamorphoſis, taken in the rigorous Senſe of the Word, appears to me a Contradiction in Terms. For I think there

there muſt be two Things neceſſary to change the primitive Parts of Salt into the primitive Parts of Gold, *viz.* To annihilate the Elements of the Salt, and to create the Elements of the Gold. Such is the Foundation of theſe pretended Metamorphoſes of a homogeneous and uniform Matter, admitted by ſo many Philoſophers. I ſhall now reſume my Proof.

It is impoſſible to conceive the Immutability of Species, unleſs they are compounded of unalterable Principles. And in order that theſe Principles, theſe primary conſtituent Particles may be ſubject to no Alteration, it is requiſite that they ſhould be perfectly ſolid, and conſequently always of the ſame Figure. If they are ſo, they cannot become other Elements, for then they muſt receive other Forms; wherefore as it is impoſſible, that, in the preſent Conſtitution of the Univerſe, the Element which ſerves to make a Man, ſhould be chang'd into the Element of a Stone, it is neceſſary, to make an Element of a Stone in the Place of the Element of a Man, to deſtroy one of theſe two Elements, and to create another in it's Room. I don't know how it happen'd

Newton admits Atoms.

pen'd that Sir ISAAC NEWTON, who allow'd of Atoms, did not draw from thence this ſo natural a Concluſion; he acknowledg'd true Atoms, indiviſible Bodies, as well as GASSENDUS; but he arriv'd at the Knowledge of this by the Help of his Mathematics; and yet at the ſame Time he believ'd that theſe Atoms, theſe indiviſible Elements, were continually changing into one another. All that can be ſaid of it is, that NEWTON was a Man, and therefore might miſtake as well as we.

It will here without doubt be demanded, how the Firſt Principles of Things being hard and indiviſible can increaſe and extend themſelves? I anſwer, that they probably increaſe only by Accretion, by Contiguity; many Atoms of Water go to the forming of one Drop, and ſo of every Thing beſides.

It will remain to know how this Contiguity operates, how the Parts of Bodies become united to one another; and this, perhaps, is one of the Secrets of the Creator, which will for ever be unknown to Man. To underſtand how the conſtituent Particles of Gold form a Piece of Gold,

Gold, it ſeems neceſſary to ſee thoſe Particles.

That Attraction is the Cauſe of this Adheſion, this Contiguity of Matter, may I think be advanc'd with the higheſt Probability. For indeed if it is demonſtrable, as I have ſhewn in my Elements, that all the Particles of Matter gravitate towards one another, whatever the Cauſe thereof may be; can any thing be more natural than to ſuppoſe that Bodies which come in Contact at the moſt Points, are the moſt ſtrongly united by the Power of this Gravitation? But this is no Place to enter into ſuch a philoſophical Detail.

CHAP.

CHAP. VIII.

Of the Nature of the Elements of MATTER, *or of* MONADES.

Newton's Opinion.

IF there was ever Reaſon to ſay, *audax Iapeti genus*, it has been on account of the Enquiries which Men have preſum'd to make into thoſe Elements that are ſeemingly plac'd at an infinite Diſtance from the Sphere of their Underſtanding. Perhaps there never was any thing more modeſt than Sir ISAAC NEWTON's Opinion, who is contented with believing that the Elements of Matter are Matter; that is to ſay, an extended and impenetrable Subſtance, into whoſe intimate Nature Man's Underſtanding cannot make its Way: that God can divide it *ad infinitum*, as he can annihilate it: but that he does not do it, but keeps theſe extended and inſeparable Particles to ſerve as a Baſis for all the Productions of the Univerſe.

Per-

Perhaps, on the other Side, nothing is more preſumptuous than the Flight Mr. LEIBNITZ has taken (ſetting out from his Principle of *ſufficient Reaſon*) to penetrate, if poſſible, into the very inmoſt Receſſes of Cauſes, into the inexplicable Nature of theſe Elements. *Leibnitz*'s Opinion.

Each Body, ſays he, is compos'd of extended Parts; but of what are theſe extended Parts compos'd? They are, continues he, diviſible and actually divided *ad infinitum*. You find here then nothing but Extenſion. But to ſay that Extenſion is a ſufficient Reaſon for Extenſion, is only running a ridiculous Round; it is even ſaying nothing. We muſt therefore ſeek for the Reaſon, the Cauſe of extended Beings, in Beings which are not the ſame as themſelves, in ſimple Beings, in *Monades*. Matter is only an Aſſemblage of ſimple Beings.

We have ſeen in the Chapter on the Soul, that according to Mr. LEIBNITZ every ſimple Being is ſubject to Change: But it's Alterations, the ſucceſſive Determinations it receives, cannot come from without, becauſe this Being is ſimple, intangible, and occupies no Space; the Source

Source of all it's Changes muſt be then within itſelf, with regard to exterior Objects; it therefore has Ideas. But it has a neceſſary Relation to all the Parts of the Univerſe, it has then Ideas relative to the whole Univerſe; the Elements of the vileſt Excrement have therefore an infinite Number of Ideas. Their Ideas, indeed, are not very clear, they have not *Apperception*, as LEIBNITZ calls it, they have not in themſelves the intimate Teſtimony of their Thoughts; but they have confus'd Perceptions of the Paſt, the Preſent, and the Future.

Four Kinds of Monades.

He admits four Kinds of Monades. I. The Elements of Matter, which have no clear Ideas. II. The Monades of Beaſts, which have ſome clear Ideas diſtinct. III. The Monades of finite Spirits, which have ſome Ideas confus'd, ſome clear, ſome diſtinct. IV. Laſtly, the Monade of God, which has none but adequate Ideas.

Objections.

I have already taken Notice, that the *Engliſh* Philoſophers, who pay no regard to Names, have laugh'd at all this inſtead of anſwering it; but it is not for me to combat LEIBNITZ any otherwiſe than by Rea-

Reaſoning. I may take the Liberty, I think, to ſay to thoſe who have ſupported ſuch Opinions, every Body agrees with you on the Principle of ſufficient Reaſon; but do you here draw a juſt Conſequence from it?

1*ſt*, You allow of Matter actually diviſible *ad infinitum*; the leaſt Particle is therefore impoſſible to be found. There is not one but what has Sides, but what fills a Place, but what has a Figure; why then will you have it compos'd of Bodies without Form, Space, or Sides? Do you not fall into the grand Principle of Contradiction, by endeavouring to follow that of ſufficient Reaſon?

2*dly*, Is it ſufficiently reaſonable that a Compoſition ſhould have nothing like what it is compounded of? Nothing like, did I ſay? The Difference between a ſimple Being and an extended Being is infinite, and yet you will have it that the one is made of the other. Would a Man who ſhould ſay that many of the Elements of Iron form Gold, or that the conſtituent Parts of Sugar compoſe Coloquintida, advance greater Contradictions?

3*dly*,

3*dly*, Can you aſſert that a ſingle Drop of Urine is made up of an infinite Number of Monades, each whereof has Ideas, altho' obſcure ones, of the whole Univerſe? And this, becauſe, according to you, the Whole is a *Plenum*; becauſe in a *Plenum* every Thing is connected; becauſe every Thing being connected to every other Thing, and a Monade having neceſſarily Ideas, it cannot have any one Perception which has not a Relation to every Thing in the World.

But is it prov'd that the Whole is a *Plenum*, notwithſtanding the philoſophical and metaphyſical Arguments in Favour of a *Vacuum*? Is there any Proof, that, ſuppoſing the Whole to be a *Plenum*, your pretended Monade muſt have the uſeleſs Ideas of all that paſſes in this *Plenum*? I appeal to your own Conſciences; don't you perceive that ſuch a Syſtem is purely imaginary? Does not a Confeſſion of human Ignorance concerning the Elements of Matter deſerve more Regard, than an inſignificant pretended Knowledge? Of what Service are Logick and Geometry, if I make Uſe of Clues to perplex me in ſuch a Labyrinth, and to run methodically into Error by the very Light intended to lead me to the Truth? CHAP.

CHAP. IX.

Of Active Power.

IT is now, I ſuppoſe agreed, that Matter can have no Motion in itſelf, and muſt therefore receive it from ſomewhat elſe.——But it cannot receive it from other Matter, for that would be a Contradiction. An immaterial Cauſe muſt then produce the Motion. God is that immaterial Cauſe; and we ſhould here take great care, that this vulgar Maxim, *We muſt not have Recourſe to God in Points of Philoſophy*, holds good only in ſuch Things as we ought to explain by the next Philoſophical Cauſes. For Example, I would explain why a Weight of four Pounds is counterpois'd by a Weight of one Pound; if I ſay in this Caſe, that God has order'd it ſo, it ſhews my Ignorance; but if I anſwer, it is be-

becauſe the Weight of one Pound is four Times as diſtant from the Point of Reſt as the four Pound Weight, I then reſolve the Queſtion. But it is not the ſame as to the Firſt Principles of Things; for there not to have Recourſe to God is often a Mark of Ignorance, becauſe either there is no God, or there are no Firſt Principles but in God.

He it is who has impreſſed on the Planets that Force by which they move from Weſt to Eaſt: he it is who cauſes the Planets and the Sun to turn on their Axes.

He has impreſs'd a Law on all Bodies, whereby they all equally tend to their Center; and laſtly, he has form'd Animals, on whom he has beſtow'd an active Force by which they produce Motion.

The grand Queſtion is, Whether the Quantity of this Force given by God to begin Motion, is always the ſame in Nature?

Whether or not there is always the ſame Quantity of Force in the World.

DESCARTES, without mentioning Force, affirms, tho' deſtitute of Proof, that the Quantity of Motion is always equal; which Opinion had the leſs Foundation,

dation, as the very Laws of Motion were unknown to him.

LEIBNITZ, born in a more enlightened Age, was oblig'd to confeſs himſelf at a Loſs about Motion, as Sir ISAAC NEWTON had done; but pretends that tho' the ſame Quantity of Motion does not, yet the Quantity of Force always ſubſiſts the ſame.

NEWTON, on the contrary, believed it a Contradiction, that Motion ſhould not be in Proportion to the Force that produced it.

Examination of Force.

Before we enter into any mechanical Diſcuſſion upon this Point, we muſt take Things according to their own Nature; for the Geometrician ſhould always be conducted by the Metaphyſician. A Man has a certain Quantity of active Force, but where was this Force before his Birth? If you ſay it was in the Germen of the Infant; What is a Force that one cannot exert? But when the Infant becomes a Man, is he not free? Cannot he make uſe of more or leſs of his Force? Suppoſe he employs a Force of three hundred Pounds to move a Machine; ſuppoſe alſo, as is poſſible, that

he exerciſes this Force in the lowering of a Lever, and that the Machine affixt to this Lever is in a Receiver in *vacuo*; this Machine may eaſily acquire a Force of two thouſand Pounds.

When the Operation is over, the Arm drawn back, the Lever taken away, the Weight left motionleſs; I demand whether the ſmall Quantity of Matter in the Receiver has acquir'd a Force of two thouſand Pounds? Do not all theſe Conſiderations ſhew, that the active Force is continually loſt and repair'd in Nature? Let us give ſome Attention to this Argument.

No Motion can be without a Vacuum; but let a ſoft Body, A,B,C,D receive an Impreſſion on all theſe Parts; I demand whether the Parts B,C,D, behind which there is no other Body, do not loſe ſome Motion? And if the Parts B,C, loſe their Motion, do they not evidently loſe their Force?

Newton's Words. Let us now hear how Sir ISAAC and Experience determine this metaphyſical Diſpute. Motion, ſays he, is produced and deſtroy'd; but becauſe of the Tenacity of the Fluids, and the ſmall Elaſticity

city

city of the Solids, there is much more Motion loſt, than is again produc'd in Nature.

This being admitted, if we conſider the Self-evident Axiom, that the Effect is always in Proportion to the Cauſe, where the Motion diminiſhes, the Force muſt neceſſarily diminiſh alſo. But in order to preſerve always the ſame Quantity of Force in the Univerſe, this Principle, that the Cauſe is proportionable to the Effect, muſt be no longer true.

The Manner of calculating Force.

It has been ſuppos'd, in order to preſerve always this ſame Quantity of Force in Nature; it has, I ſay, been ſuppoſed, that it would be ſufficient to alter the Manner of eſtimating this Force: Wherefore, as MERSENNUS, DESCARTES, NEWTON, MARIOTTE, VARIGNON, *&c.* have always, after ARCHIMEDES, meaſured the Force of a Body in Motion, by multiplying it's Maſs by it's Velocity; LEIBNITZ, BERNOULLI, HERMAN, POLENI, s'GRAVESEND, WOLF, *&c.* have inſtead thereof multiply'd the Maſs by the Square of the Velocity.

This

This Diſpute has divided *Europe*, tho' methinks we at laſt ſhould perceive that it is at Bottom only a Diſpute concerning Words. 'Tis impoſſible theſe Philoſophers, altho' diametrically oppoſite, ſhould be deceived in their Calculations. Theſe are equally true. The mechanical Effects anſwer equally to either manner of computing, There is therefore undoubtedly a Senſe wherein they are all right, and the Point where they are all right, is what ſhould reconcile them. This, as Dr. CLARKE had firſt of all ſhew'd, altho' in ſomewhat a rough Manner, will be underſtood by what follows:

Concluſion of the two Parties.

If you conſider the Time wherein a Body in Motion acts, it's Force at the End of that Time is as the Square of it's Velocity multiplied by it's Maſs. And why ſo? Becauſe the Space paſs'd through by the Maſs, is as the Square of the Time wherein it is paſs'd through: Now the Time is as the Velocity. Wherefore a Body that has paſſed through a certain Space in a certain Time, acts at the End of that Time according to it's Maſs multiplied by the Square of it's Ve-

Velocity. Thus the Maſs 2, in the Time 2, runs through any given Space with a double Degree of Velocity, at the End of which Time it's Force is 2 multiplied by the Square of it's Velocity 2. The Whole makes 8, and the Force of the Body is as 8. In this Caſe the Followers of LEIBNITZ are not at all in the Wrong: But the CARTESIANS and NEWTONIANS both have likewiſe much Reaſon on their Side, when they conſider the Thing in another Light; for a Body of four Pounds Weight, ſay they, with a certain Degree of Velocity, has, in an equal Time, exactly the ſame Force, as a Weight of one Pound with four Times the ſame Velocity; and elaſtic Bodies, which ſtrike againſt each other, rebound always in a reciprocal Ratio of their Velocity and their Maſs. For Example, a Bowl of a certain Maſs with a Motion as 2, and another with a double Maſs, with its Motion as 1, ſtriking one againſt the other, come together in equal Times, and rebound to equal Diſtances. We are not to conſider what happens to Bodies moved in unequal Times, but in equal Times; the not obſerving of which Diſtinction has oc-

occaſioned this Miſunderſtanding. The new Manner of conſidering Force is true in one Senſe and falſe in another. It ſerves therefore only to complicate and perplex a ſimple Idea. We ſhould for this Reaſon keep to the ancient Rule; which always gives us, as a Meaſure of the Force in all poſſible Caſes, the Velocities multiplied by the Maſſes applied to the Times.

What ſhall we conclude from theſe two Ways of conſidering Things? Every Body muſt agree that the Effect is always in Proportion to the Cauſe; then if Motion diminiſhes in the World, the Force which is the Cauſe of it muſt diminiſh alſo. The Reader has now ſeen, what Sir ISAAC NEWTON's Opinions were on moſt of the Queſtions belonging to Metaphyſicks, and is left at Liberty to judge between him and Mr. LEIBNITZ.

FINIS.